What Is Claimed Is:

1. An oligonucleotide useful as a primer for inducing mutagenesis in a complementarity determining region (CDR) of an immunoglobulin light chain gene, said oligonucleotide having 3′ and 5′ termini and comprising:

a) a nucleotide sequence at said 3′ terminus capable of hybridizing to a first framework region of an immunoglobulin gene;

b) a nucleotide sequence at said 5′ terminus capable of hybridizing to a second framework region of an immunoglobulin gene; and

c) a nucleotide sequence between said 3′ and 5′ termini according to the formula:

$$[NNK]_n,$$

wherein N is independently any nucleotide, K is G or T, n is 3 to about 24, said 3′ and 5′ terminal nucleotide sequences having a length of about 6 to 50 nucleotides, or an oligonucleotide having a sequence complementary thereto.

2. The oligonucleotide of claim 1 wherein said 5′ terminus has the nucleotide sequence 5′-TATACTGTCAGCAGTAT-3′ (SEQ ID NO 26) or 5′-GATTTTGCAGTGTATTACTGTCAGCAGTAT-3′ (SEQ ID NO 27), or an oligonucleotide having a sequence complementary thereto.

3. The oligonucleotide of claim 1 wherein said 3′ terminus has the nucleotide sequence 5′-ACTTTCGGCGGAGGGACCAAGGTGGAG-3′ (SEQ ID NO 28) or 5′-ACTTTCGGCGGAGGGACC-3′ (SEQ ID NO 29), or an oligonucleotide having a sequence complementary thereto.

4. The oligonucleotide of claim 1 wherein n is 4, 5, 6, 10 or 16.

5. The oligonucleotide of claim 1 wherein said immunoglobulin is human.

6. The oligonucleotide of claim 1 wherein said CDR is CDR3.

7. The oligonucleotide of claim 1 according to the formula: 5'-GATTTTGCAGTGTATTACTGT$[NNK]_{10}$TTCGGCGGAGGGACCAAGGTGGAG-3' (SEQ ID NO 12), or an oligonucleotide having a sequence complementary thereto.

8. An oligonucleotide useful as a primer for inducing mutagenesis in a complementarity determining region (CDR) of an immunoglobulin light chain gene, said oligonucleotide having 3' and 5' termini and comprising:

a) a nucleotide sequence at said 3' terminus capable of hybridizing to a first framework region of an immunoglobulin gene;

b) a nucleotide sequence at said 5' terminus capable of hybridizing to a second framework region of an immunoglobulin gene; and

c) a nucleotide sequence between said 3' and 5' termini according to the formula:

$$[MNN]_n,$$

wherein N is independently any nucleotide, M is A or C, n is 3 to about 24, said 3' and 5' terminal nucleotide sequences having a length of about 6 to 50 nucleotides, or an oligonucleotide having a sequence complementary thereto.

9. The oligonucleotide of claim 8 wherein said 5' terminus has the nucleotide sequence 5'-GTTCCACCTTGGTCCCTTGGCCGAA-3' (SEQ ID NO 30), or an oligonucleotide having a sequence complementary thereto.

10. The oligonucleotide of claim 8 wherein said 3' terminus has the nucleotide sequence 5'-

ACAGTAGTACACTGCAAAATC-3' (SEQ ID NO 31), or an oligonucleotide having a sequence complementary thereto.

11. The oligonucleotide of claim 8 wherein n is 8, 10 or 16.

12. The oligonucleotide of claim 8 wherein said immunoglobulin is human.

13. The oligonucleotide of claim 8 wherein said CDR is CDR3.

14. A method for producing an antibody combining site in a polypeptide comprising inducing mutagenesis in a complementarity determining region (CDR) of an immunoglobulin light chain gene which comprises amplifying a CDR portion of the immunoglobulin gene by polymerase chain reaction (PCR) using a PCR primer oligonucleotide, said oligonucleotide having 3' and 5' termini and comprising:

a) a nucleotide sequence at said 3' terminus capable of hybridizing to a first framework region of an immunoglobulin gene;

b) a nucleotide sequence at said 5' terminus capable of hybridizing to a second framework region of an immunoglobulin gene; and

c) a nucleotide sequence between said 3' and 5' termini according to the formula:

$$[NNK]_n,$$

wherein N is independently any nucleotide, K is G or T, and n is 3 to about 24, said 3' and 5' terminal nucleotide sequences having a length of about 6 to 50 nucleotides, or an oligonucleotide having a sequence complementary thereto.

15. The method of claim 14 wherein said 5' terminus has the nucleotide sequence 5'-TATACTGTCAGCAGTAT-3' (SEQ ID NO 26) or 5'-GATTTTGCAGTGTATTACTGTCAGCAGTAT-3' (SEQ ID NO 27), or

an oligonucleotide having a sequence complementary thereto.

16. The method of claim 14 wherein said 3' terminus has the nucleotide sequence 5'-ACTTTCGGCGGAGGGACCAAGGTGGAG-3' (SEQ ID NO 28) or 5'-ACTTTCGGCGGAGGGACC-3' (SEQ ID NO 29), or an oligonucleotide having a sequence complementary thereto.

17. The method of claim 14 wherein n is 4, 5, 6, 10 or 16.

18. The method of claim 14 wherein said immunoglobulin is human.

19. The method of claim 14 wherein said CDR is CDR3.

20. The method of claim 14 according to the formula: 5'-GATTTTGCAGTGTATTACTGT$[NNK]_{10}$TTCGGCGGAGGGACCAAGGTGGAG-3' (SEQ ID NO 12), or an oligonucleotide having a sequence complementary thereto.

21. The method of claim 14 wherein said immunoglobulin light chain gene includes a sequence having the sequence characteristics of the light chain shown in SEQ ID NO 2 or in SEQ ID NO 62.

22. The method of claim 14 wherein said immunoglobulin light chain gene has the sequence characteristics of the light chain gene in ATCC Accession No. 75408.

23. The method of claim 14 that further comprises the steps of:

a) isolating the amplified CDR to form a library of mutagenized immunoglobulin light chain genes;

b) expressing the isolated library of mutagenized light chain genes in combination with one or more heavy chain genes to form a combinatorial

antibody library of expressed heavy and light chain genes; and

c) selecting species of said combinatorial antibody library for the ability to bind a preselected antigen.

24. The method of claim 23 wherein said one or more immunoglobulin heavy chain genes is a library of heavy chain genes.

25. A method for producing an antibody combining site in a polypeptide comprising inducing mutagenesis in a complementarity determining region (CDR) of an immunoglobulin light chain gene which comprises amplifying a CDR portion of the immunoglobulin gene by polymerase chain reaction (PCR) using a PCR primer oligonucleotide, said oligonucleotide having 3' and 5' termini and comprising:

a) a nucleotide sequence at said 3' terminus capable of hybridizing to a first framework region of an immunoglobulin gene;

b) a nucleotide sequence at said 5' terminus capable of hybridizing to a second framework region of an immunoglobulin gene; and

c) a nucleotide sequence between said 3' and 5' termini according to the formula:

$$[MNN]_n,$$

wherein N is independently any nucleotide, M is A or C, n is 3 to about 24, said 3' and 5' terminal nucleotide sequences having a length of about 6 to 50 nucleotides, or an oligonucleotide having a sequence complementary thereto.

26. The method of claim 25 wherein said 5' terminus has the nucleotide sequence 5'-GTTCCACCTTGGTCCCTTGGCCGAA-3' (SEQ ID NO 30), or an oligonucleotide having a sequence complementary thereto.

27. The method of claim 25 wherein said 3' terminus has the nucleotide sequence 5'-ACAGTAGTACACTGCAAAATC-3' (SEQ ID NO 31), or an oligonucleotide having a sequence complementary thereto.

28. The method of claim 25 wherein n is 8, 10 or 16.

29. The method of claim 25 wherein said immunoglobulin is human.

30. The method of claim 25 wherein said CDR is CDR3.

31. The method of claim 25 wherein said immunoglobulin light chain gene includes a sequence having the sequence characteristics of the light chain shown in SEQ ID NO 2 or in SEQ ID NO 62.

32. The method of claim 25 wherein said immunoglobulin light chain gene has the sequence characteristics of the light chain gene in ATCC Accession No. 75408.

33. The method of claim 25 that further comprises the steps of:

a) isolating the amplified CDR to form a library of mutagenized immunoglobulin light chain genes;

b) expressing the isolated library of mutagenized light chain genes in combination with one or more heavy chain genes to form a combinatorial antibody library of expressed heavy and light chain genes; and

c) selecting species of said combinatorial antibody library for the ability to bind a preselected antigen.

34. The method of claim 33 wherein said one or more immunoglobulin heavy chain genes is a library of heavy chain genes.